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Synthesis of 1,4-Bis(4-Aminophenyl)-1,3-Butadiene as a Linker for Hexamolybdate Stoppered Rotaxanes

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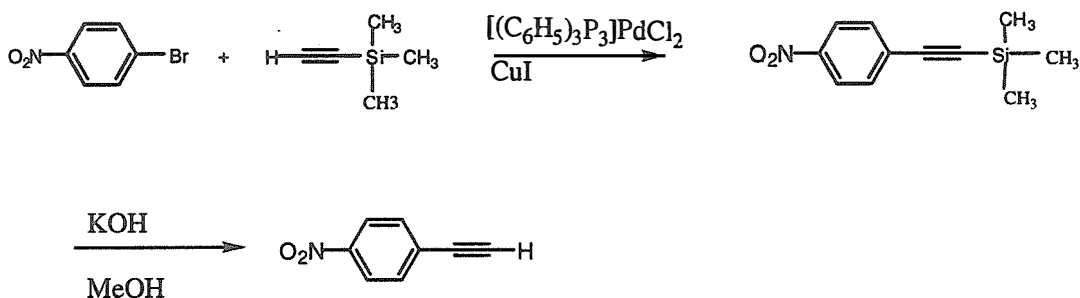
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SYNTHESIS OF 1,4-BIS(4-AMINOPHENYL)-1,3-BUTADIYENE
AS A LINKER FOR HEXAMOLYBDATE STOPPERED ROTAXANES

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This project is aimed at the synthesis of 1,4-Bis(4-aminophenyl)-1,3-butadiyne as a linker for rotaxanes. A rotaxane consists of a long chain, the linker, threaded through a ring molecule and blocked on either end by a bulky ion or "stopper". The first step in the synthesis was the reaction of trimethylsilyl acetylene with p-bromo-nitrobenzene¹. The resulting p-nitrotrimethylsilylethynylbenzene was purified by column chromatography. The silyl protecting groups were then removed and the resulting p-nitroethynylbenzene was purified by column chromatography¹ followed by recrystallization from hexane. Attempts were made to join two equivalents of the product together at the acetylenic carbons forming a long straight chain². Future plans include catalytic reduction of the nitro groups to amine groups and subsequent attachment of the linker to two hexamolybdate ions.



¹S. Takahashi, Y. Kurotama, K. Sonogashira, N. Hagihara. *Communications* 627-630 (Aug 1980)

²G. Eglinton, W. McCrae. The Coupling of Acetylenic Compounds. 311